

AP20 Rec'd PCT/PTO 11 MAY 2006

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Claims (amended 21 June 2005)

1. A method for one-piece injection moulding of a soft needle catheter used together with an introducer needle comprising a hub (3) and a tube-shaped flexible part (4), comprising the steps of:
- feeding a molten polymer into a mould comprising a core (9) defining a cavity composed of a hub cavity and a tube-shaped cavity, said core having a cone-shaped part and a cylindrical part (5) forming the interior of the catheter;
 - removing the core from the catheter when the polymer has been sufficiently cured for the core to be removed; and
 - removing the catheter from the mould when the polymer has been sufficiently cured to be removed;
- characterized in using a core (9) wherein the cone-shaped part of the core forms at least a part of the hub cavity and extends into the tube-shaped cavity causing the interior of the tube-shaped flexible part (4) to be at least partially cone shaped.
2. A method according to claim 1, wherein the catheter is cured to its final state in the mould.
3. A method according to claim 1 or 2, wherein the molten polymer is supplied to the mould via at least two inlets preferably the inlets are placed symmetrically around the axis of the core.
4. A method according to any one of claims 1 to 3, wherein the inlets are placed at the hub (3) forming part of the mould.
5. A method according to any one of claims 1 to 4, wherein the mould separates along the axis of the tube-shaped part (4).

6. A method according to any one of claims 1 to 4, wherein the mould separates perpendicular to the tube-shaped part (4) and at or just below the hub (3).

5 7. A method according to any one of claims 1 to 6, wherein the polymer is chosen from polyester ethers, ECDEL, styrene based TPE, olefin based TPE, urethane based TPE, ester based TPE, amid based TPE polyolefines and silicone rubbers.

10 8. A method according to any one of claims 1 to 6, wherein the polymer is selected from the group consisting of polypropylene, C-FLEXTM, mixtures of C-FLEXTM and polypropylene, LUPOLENTM 1840H, LUPOLENTM 3020D, PELLETHANETM 2363-75D, PELLETHANETM 2363-55D, TECOTHANETM and CARBOTHANETM.

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9. A method according to any one of claims 1 to 8, wherein the polymer has a shore between 40 and 60D.

10. A method according to any one of claims 1 to 9, wherein more than one
20 polymer is used in the method.

11. A soft needle catheter used together with an introducer needle comprising a hub (3) and a tube-shaped flexible part (4) having a first end and a second end, the hub and the tube-shape flexible part being in one
25 piece and being connected at the first end of the tube-shaped flexible part, characterized in that the interior of the tube-shaped part has both a cone-shaped part and a cylindrical part (5), the cylindrical part being placed at the second end of the tube-shaped flexible part.

12. A soft needle catheter according to claim 11, wherein the hub (3) is fitted with means for assisting the removal of the catheter from the patient, preferably in form a flap, a rim or a groove.
- 5 13. A soft needle catheter according to any one of claims 11 or 12, wherein the hub (3) is fitted with at least one carving, preferably two carvings placed opposing each other.
- 10 14. A soft needle catheter according to any one of claims 11 to 13, wherein the hub (3) has means for sealing the hub to a drug delivery device, said means being provided on the outside of the hub in form of at least one round going packing, rim or fin or by having a hub with a cone shaped exterior having a size suitable to fit into a cone shaped cavity of a drug delivery device.
- 15 15. A soft needle catheter according to any one of claims 11 to 14, wherein the tube-shaped part (4) of the soft needle catheter has a ratio between the cylindrical part (5) and the cone-shaped part in the range from 10:1 to 1:40, preferably the range is from 5:1 to 1:30, more preferably the range is from 2:1 to 1:20 and most preferably from 1:1 to 1:15.
- 20 16. A soft needle catheter according to any one of claims 11 to 15, wherein the cylindrical part (5) is 1.5 mm long.
- 25 17. A soft needle catheter according to any one of claims 11 to 16, wherein the cylindrical part (5) is rounded.
- 30 18. A soft needle catheter according to any one of claims 11 to 17, wherein the polymer is chosen from polyester ethers, ECDEL, styrene based TPE, olefin based TPE, urethane based TPE, ester based TPE, amid based TPE polyolifines and silicone rubbers.

19. A soft needle catheter according to any one of claims 11 to 17, wherein the polymer is selected from the group consisting of polypropylene, C-FLEX™, mixtures of C-FLEX™ and polypropylene, LUPOLEN™ 1840H, LUPOLEN™ 3020D, PELLETHANE™ 2363-75D, PELLETHANE™ 2363-55D, TECOTHANE™ and CARBOTHANE™.

20. A soft needle catheter according to any one of claims 11 to 19, wherein the catheter is composed from more than one polymer.

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21. A mould for producing a soft needle catheter to be used together with an introducer needle according to claim 11 comprising a hub cavity, a tube-shaped cavity and a core (9) having a cone-shaped part and a cylindrical part (5), characterized in that the cone-shaped part of the core extends into the tube-shaped cavity.

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22. Use of a catheter according to any one of claims 11 to 20 intravenously or subcutaneously preferably for intravenous or subcutaneous injection of a drug.

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